UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/630,494	KUMAR, SAURABH
	Examiner	Art Unit	
	Xavier Szewai Wong	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>5th May 2009</u>.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-5,7-11,13-31 and 33-35</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-5,7-11,13-31 and 33-35</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claims 1-5, 7-11, 13-31 and 33-35 are pending

This is a non-final action

Claim Objections

Please delete all occurrences of "adapted to" and "wherein" in the pending claims as these phrases are deemed as optional language.

Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure. However, examples of claim language, although *not* exhaustive, that may raise a question as to the limiting effect of the language in a claim are:

    (A)   " adapted to " or "adapted for " clauses;
    (B)   " wherein " clauses; and
    (C)   " whereby " clauses.

The determination of whether each of these clauses is a limitation in a claim depends on the specific facts of the case. In Hoffer v. Microsoft Corp., 405 F.3d 1326, 1329, 74 USPQ2d 1481, 1483 (Fed. Cir. 2005), the court held that when a "whereby' clause states a condition that is material to patentability, it cannot be ignored in order to change the substance of the invention." Id. However, the court noted (quoting Minton v. Nat 'l Ass 'n of Securities Dealers, Inc., 336 F.3d 1373, 1381, 67 USPQ2d 1614, 1620 (Fed. Cir. 2003)) that a "whereby clause in a method claim is not given weight when it simply expresses the intended result of a process step positively recited.'" Id.

Claims **11, 15** and **19**: the phrase "a session" is indefinite and failing to

particularly point out and distinctly claim the subject matter which applicant regards as

the invention.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

Claims 1- 6, 9-15, 17- 22, 24-29 and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mankude et al (US 6795866 B1, Mankude) in view of Egevang (US 2003/0081605 A1) and in further view of Basso et al (US 7065086 B2, Basso).

Claims 1, 9, 11, 13, 15, 17, 19, 20, 28, 32, 33, 34 and 35: Mankude shows an apparatus (e.g. switch – fig. 2 server node for multiplexing) comprising an article of manufacture comprising computer-readable medium having instructions stored thereon executable by a processor to handle packet fragments, the apparatus handles the packet fragments by:

i. an entry point and network device (fig. 2 items 221, 218 & 230) for determining if a fragment of a packet is either a head fragment or a non-head fragment (col. 7 lines 10-12);

ii. processing the fragment if it is determined to be said head fragment to determine a destination address for said head fragment (col. 7 lines 17-20), wherein the means is a packet fragment forwarding mechanism *230*;

iii. *using* the determined destination address to any corresponding non-head fragment of said packet that is received subsequently after the head fragment and to any corresponding stored non-head fragment of the packet that is received prior to the head fragment (col. 7 lines 24-31);

wherein step iii. above comprising further steps of:

iv. holder object means for generating a session associated with the head fragment (col. 7 lines 20-22: destination address *entry* initialization by a holder object; see also

col. 6 lines 28-36) and holder means for obtaining the destination address from the

session, and applying the determined destination address to any corresponding non-

head fragment of said packet that is received subsequently after the head fragment

includes *using* the destination address obtained from said session to said any

corresponding non-head fragment received subsequently after the head fragment (col. 7

lines 24-31); and,

v. a storage unit (fig. 4) coupled in the network device for storing a plurality of

corresponding non-head fragments if the session has not been generated (col. 6 lines

37-42: "non-first" fragments stored in queues).

Mankude further discloses applying the determined destination address to the

non-head fragments includes overwriting (modifying) a destination field of these non-

head fragments with the determined destination address (col. 5 lines 57-63: a *unique*

value, based on the header, is "*copied*" into each (non-head) fragment to identify which packet

the (non-head) fragment belongs to, and thus, to which destination according to the header).

Yet, Mankude does not very particularly mention:

"an exit point coupled to the network device to update non-head fragments."

Egevang discloses a communication module (exit point) applies (modifies) the

destination address based on the NAT process which is determined by the first packet

fragment destination address ([0048] lines 1-3 & 7-11). It would have been obvious to one

of ordinary skill in the art at the time the invention was created to implement an exit

point coupled to the network device to update non-head fragments as taught by

Egevang to the fragment processing means to use destination address to

corresponding stored fragments after the session has been generated as taught by
Mankude to reduce latency for transmitting data across a network ([0001] of Egevang).

Yet, Mankude, in combination with Egevang, do not very specifically mentioned
of "forwarding said head fragment to said determined destination address," "non-head
fragment of said packet that was stored prior to receiving said head fragment and to at
least one non-head fragment of said packet that is received after said forwarding said
head fragment" and "adapted to process according to at least one of layer 4 through
layer 7 criteria."

Basso teaches forwarding said head fragment to said determined destination
address (col. 10 lines 1-5: first fragment contains relevant content-based info – destination
address – is forwarded to its destination); applying said destination address to non-head
fragment of said packet that was stored prior to receiving said head fragment and to at
least one non-head fragment of said packet that is received after said forwarding said
head fragment (col. 11 lines 5-12: all fragments received prior to the first fragment... forwarded
to their destinations; col. 12 lines 11-20: fragments that are not the first or last fragment are
stored in PCCB queue until the first fragment is received since it contains *content-based routing
information – destination address* applied; col. 16 lines 43-47: destination ID applied to
fragments and forwarded) and switch is adapted to process according to at least one of
layer 4 through layer 7 criteria (*abstract*: layers 3-7). It would have been obvious to one of
ordinary skill in the art when the invention was created to implement the steps of Basso
to the fragment forwarding system of Mankude, in combination with Egevang, to avoid
time-and-resource consuming storing of fragments as "fast forwarding" is applied
(Basso: col. 5 line 65- col. 6 line 9).

Claim 2, applied to claim 1: Mankude teaches processing the head fragment

includes generating a session pointer data structure having the destination address (fig.

4: 412, 422, 432; 416, 426, 436), the method further comprising after processing the head

fragment:

i. locating said destination address from the session pointer data structure that

was generated during the processing of the head fragment (col. 6 lines 37-44).

Yet, the applying of said destination address to said at least one corresponding

non-head fragment includes applying the destination address located from said session

pointer data structure to a corresponding non-head fragment subsequently received

after receiving said head fragment.

Egevang discloses a router means comprising a packet fragmentation manager

(PFM) comprising a collection module receives packet fragments ([0045] lines 1-5) and

then following receiving a first packet fragment (header), a translation module will

translate destination address to subsequent packet fragments based on the first packet

fragment destination address and network address translation NAT process ([0047]).

The translation and modifying steps may read on as *applying the determined*

destination address to the non-head packet fragments.

It would have been obvious to one of ordinary skill in the art at the time the

invention was created to modifying the pointer of Mankude to include a step of applying

a destination address to a fragment as Egevang applies a destination address to the

fragments as a known option in the same field of endeavor to realize the benefit of

improving efficiency in packet fragmentation and forwarding by using pointers rather

than consuming ample memory (array) space.

Claim 3, applied to claim 1: Mankude mentions the packets as IP packets (col. 5

lines 57-63), therefore, the fragments are IP-fragments.

Claim 4, applied to claim 1: Mankude discloses the first (head) fragment includes

all header information (col. 6 lines 6-8) from the packet, and wherein the at least one non-

head fragment includes packet data from the packet (col. 6 lines 4-6).

Claim 5, applied to claim 1: Mankude discloses processing head fragment

includes processing one of the fragments having the header information (col. 7 lines 10-

12). Yet, Mankude may not have specifically mentioned duplicative header information

from the packet wherein the step of applying (destination address) includes designating

another one of the fragments having the header information as the at least one non-

head fragment. Egevang discloses that each packet fragment (e.g. meaning head & non-

head fragments as well) may include a packet fragment header wherein a "more bit" flag

(in both head and non-head fragments) indicate if there are more fragments to be

processed ([0038]); which means that the "more bit" flag is interpreted as header

information designated to another non-head fragment, wherein the non-head fragment

later is applied a destination address thereof ([0045-48]). It would have been obvious to

one of ordinary skill in the art at the time the invention was created to realize the benefit

of having header information in non-head fragments as taught by Egevang to the

fragment processing of Mankude since fragments may not be processed in order and by

having header information the fragment processing manager may know where the

fragments belong to.

Claims 10, 14 and 18, applied to claims 9, 13 and 17: Egevang discloses

forwarding the non-head fragments having the determined destination address applied

thereto ([0048]).

Claims 21 and 29, applied to claims 20 and 28: Egevang shows in fig. 1 a router

110 comprising packet fragmentation manager (PFM) may be interpreted as a switch

network device ([0045]).

Claim 22, applied to claim 20: Egevang discloses a collection module *402* (entry

point) and a communication module *408* (exit point) comprise software-based function

([0044] lines 11-13; [0048] lines 7-11).

Claim 24, applied to claim 20: Egevang discloses the network device processes

the head fragment to determine the destination address ([0044-45]).

Claim 25, applied to claim 20: Egevang discloses a translation module *406*

(another network device) the communication module *408* (exit point) to perform head

fragment processing ([0047] lines 1-9).

Claim 26, applied to claim 20: Egevang discloses a translation module *406*

(another storage unit) coupled to the communication module *408* (exit point) to store

destination address ([0047]: NAT process obviously needs address storage).

Claim 27, applied to claim 20: Egevang discloses the router (network device) has

software program to handle fragments ([0033]).

Claims 7, 16 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Mankude et al (US 6795866 B1, Mankude) in view of Egevang (US 2003/0081605

A1) and Basso et al (US 7065086 B2, Basso), applied to claims 1, 20 and 28, and in

further view of Iny (US 2002/0061030 A1).

Claims 7, 16 and 30, applied to claims 1, 20 and 28: Mankude, modified by

Egevang and Basso, disclose the claimed invention yet do not specifically mention

addition of a routing tag to non-head fragments that includes the determined destination

address. Iny mentions fragments being tagged with destination ID ([0020]) before the

fragments are sent to their destinations. It would have been obvious to implement the

step of tagging a destination address to a fragment as taught by Iny to the fragment

forwarding process of Mankude, modified by Egevang, so that the fragments may be

forwarded to a reachable destination while maintaining load balance.

Claims 8, 23 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Mankude et al (US 6795866 B1, Mankude) in view of Egevang (US 2003/0081605

A1) and Basso et al (US 7065086 B2, Basso), applied to claims 1, 20 and 28, and in

further view of Malagrino et al (US 6714985 B1, Malagrino).

Claims 8, 23 and 31, applied to claims 1, 20 and 28: Mankude, modified by

Egevang and Basso, disclose the claimed invention yet may not have specifically

mentioned the head fragment is processed according to at least one of layer 4 to layer 7

criteria. Malagrino discloses that non-last (e.g. including head) fragments are processed

through higher layer (layers 4-7) operations (col. 4 lines 27-42). It would have been

obvious to one of ordinary skill in the art at the time the invention was created to forward

the head (or non-last) fragments for higher layers processing as taught by Malagrino and

apply such process to the fragmentation manager of Mankude, modified by Egevang, to

avoid inefficient use of memory due to the varying number of fragments at a switch and

make it easier for hackers to obtain packet info (col. 3 lines 10-26 of Malagrino).

Response to Arguments

     Applicant's arguments with respect to claims 1, 13, 17, 20, 28, 33 and 34 have

been considered but are moot in view of the new ground(s) of rejection. Applicant

argues Egevang does not *obviously* suggest "applying the determined destination

address to the non-head fragments includes overwriting a destination field of these non-

head fragments with the determined destination address." The examiner suggests that

Mankude does read on the above since a *unique value*, based on the header, is *copied*

into those non-head fragments so that the non-head fragments can be linked eventually

to the destination where the header will be, col. 5 lines 56-63. Such "copying" of the

unique value, which leads to the header destination, is deemed to be an action of

overwriting (or being read as "modifying") destination fields in the non-head fragments

since originally the non-head fragments are held by holder objects by the non-head

fragments prior to knowing their destination node (e.g. destination originally unknown to the

non-head fragments), col. 6 lines 40-44: upon... determining the destination node, the

system forwards the queued packet fragments to the destination node.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. Viswanath et al, US 6798788 B1: policy filter is configured for determining a policy identifier that specifies a layer 3 switching operation to be performed on a corresponding layer 2 frame for all non-fragmented packets and the first fragment of a fragmented flow. In particular, the policy filter 80 obtains the layer 3 information (such as IP source address, IP destination address), and layer 4 information (such as TCP source port or TCP destination port) from the non fragmented IP packet or the first IP fragment in the layer 2 packet

2. Reast, US 7372864 B1: if an incoming unit of data is a fragment of a packet in conformance with the Internet Protocol (IP), network processor may attempt to match its source and destination addresses to an existing entry in such a linked list; if there is a match, network processor may check if the complete datagram has arrived and if not, add the fragment to the linked list for use in future when the last fragment has arrived; otherwise, if the complete datagram has arrived, network processor may assemble the datagram in sequence and then transmit the datagram to a queue in switch fabric, also called egress queue

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xavier Wong whose telephone number is 571.270.1780. The examiner can normally be reached on Monday through Friday 8:30 am - 6:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571.272.3174. The fax phone number for the organization where this application or proceeding is assigned is 571.273.8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866.217.9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571.272.1000.

/Xavier Szewai Wong/   /Kevin C. Harper/
x.s.w   Primary Examiner, Art Unit 2416
30th August 2009